

# LAKE TURBO RENEGADE 270

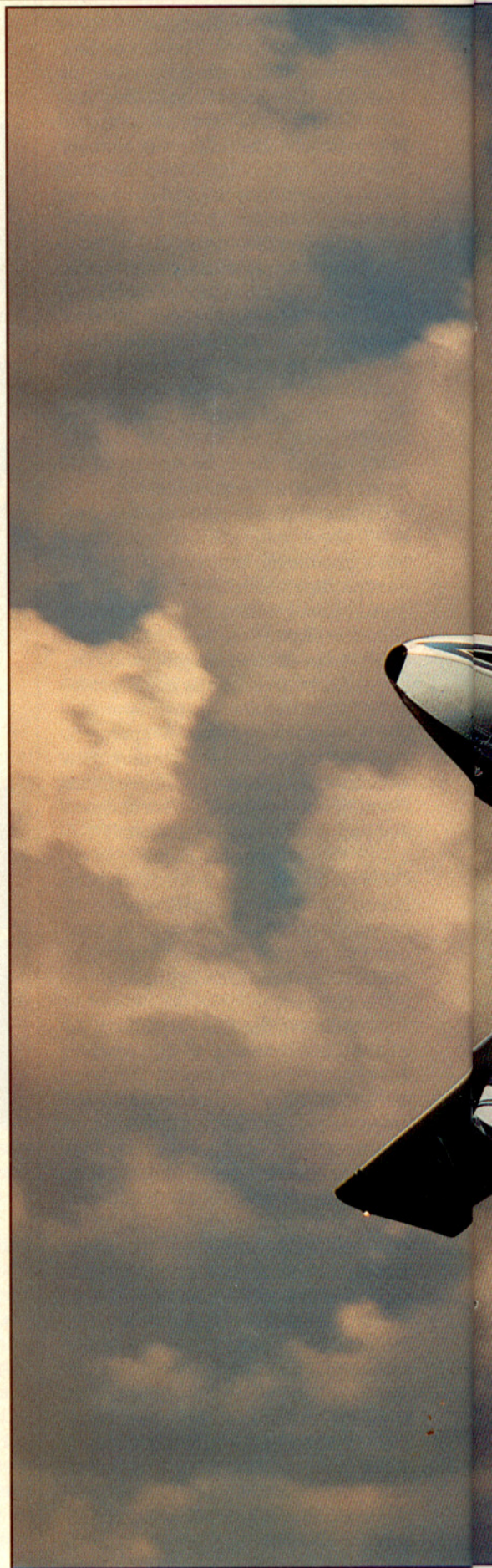
*Equally at home on land,  
at sea, and in the air*

BY RICHARD L. COLLINS

**A**irplanes and boats are alike, at least in one way. Both deal with a medium, air or water, that we can't manage without the machine. True, Daedalus made wings for himself and his son and tried to fly, and true, people have managed to swim the English Channel (or around Manhattan without melting), but we usually use boats on the water and airplanes in the air. The combination of the two has always been a relative rarity, but if you enjoy the water and like to fly, a flying boat is a winning combination.

The rating you get that allows you to fly off the water says "airplane, single-engine sea" unless you happen upon a Grumman twin or a Seabee that has been converted to a twin. The airplane that has been the most fun in which to use that rating is the Lake amphibian. It does indeed lack the utility of a Cessna on floats, which can be easily docked and which, in the bush, has a place to lash canoes or whatever else you would like to carry externally. Float airplanes are just that: airplanes on which pontoons have been fitted. The Lake is a true flying boat, one that might be as good a combination as we'll ever see.

The latest version of the Lake is the Turbo



Renegade 270, the number standing for the amount of horsepower that is being developed by the Lycoming TSIO-540 mounted up on the pod. For a basic airframe that started with a 125-horsepower engine, the power is significant. In flying and instructing in previous Lakes—Buccaneers, with a 200-hp Lycoming—I never had the impression that they were underpowered, but after flying the 270-hp model, there is no looking back. It is quite a happy marriage of airplane and horsepower. More than that, too. The hull is longer than the Buccaneer's and has been reshaped. The horsepower part tends to relate to the airplane. The longer and better hull makes it a better boat.

The improvements that made a Buccaneer into a Renegade were quite obvious in some lake flying in central Florida. The surface wind was running 10 to 12 knots, not enough to make whitecaps on the shallow lakes around Orlando but enough to get the waves up. If I had been flying a Buccaneer, I would have looked for protected water near the edge

of the lake. With the Turbo Renegade, we shot landings (waterings?) in the middle of the lake where the waves were higher than I would have taken in a Buccaneer.

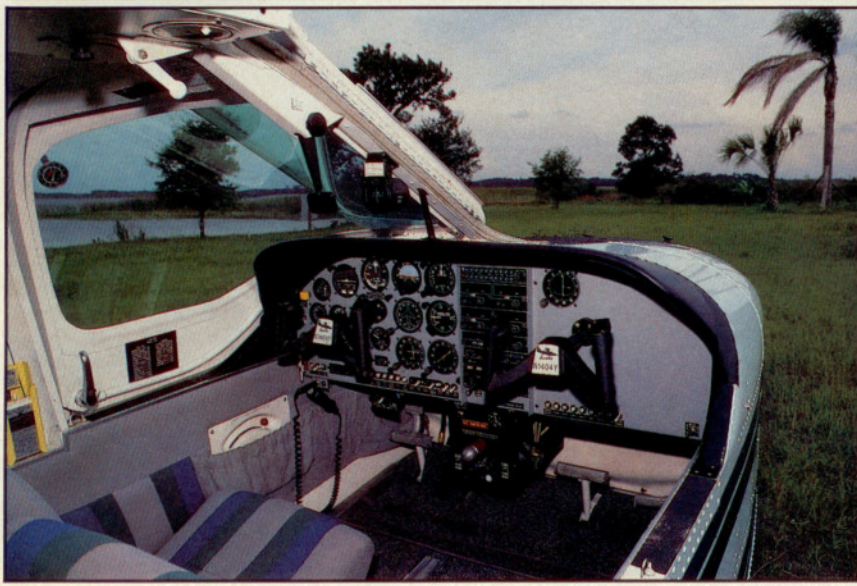
Waves bother seaplane pilots because they beat up the airframe and they prompt porpoising, a term also used for landplanes and a term that takes on real meaning when, in a seaplane, elevator control gets out of phase with the wave action. Seas can just get too high as well, and if you remember the World War II stories about the Catalinas or other seaplanes water-taxiing hundreds of miles after a rescue, it was usually because the seas were too high for a takeoff. Converting an airplane to a boat is relatively simple because once you touch the water the drag is high and the stop is quick. Converting the boat back to an airplane takes a lot more distance and involves a lot more wave encounters, again because the drag is high.

The Renegade deals with waves nicely. This day we were able to fly the seaplane onto the water (as opposed to

making a full-stall touchdown, which you would do in rough water), and after the first takeoff there was no porpoising at all. The drill on takeoff is to give it the 270 horses, apply full back stick, and when the airplane rears up out of the water, ready to get on the step, release back pressure until it is running level on the water, on the step. If a wave induces a pitch change, the way to deal with it is to virtually ignore it. The new hull shape tends to damp pitch changes instead of accentuate them.

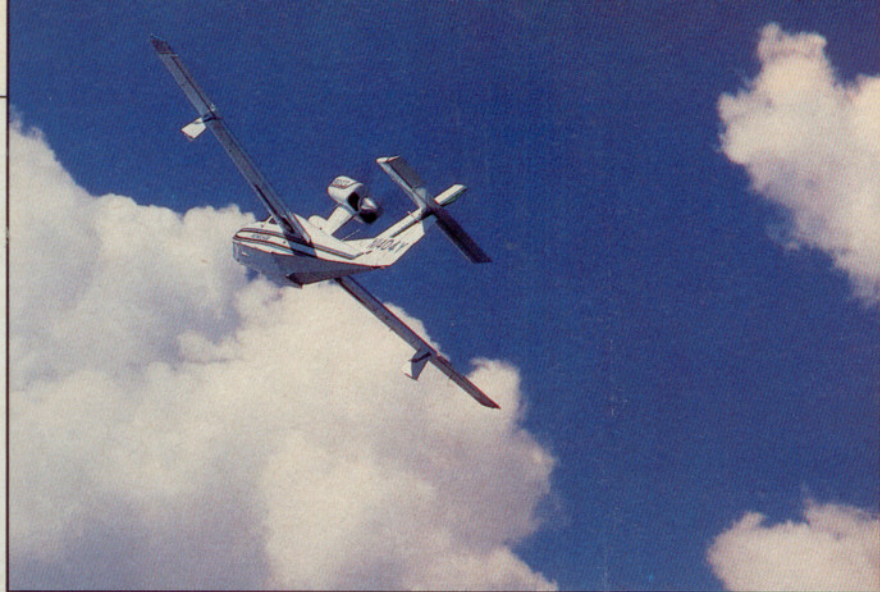
On landing, the same procedure works. Flare, fly the airplane onto the water gently, power off, and as it slows and you feel it start to enter the water as opposed to skimming across it, back stick, and it stops with a nice splash.

On the surface, all the Lake amphibians are more like motorboats. Airplanes with floats are more like sailboats, and while I like sailboats a lot more than motorboats, I also appreciate the Lake's surface handling qualities. Step-taxiing is a lot of fun, rather like roaring about in a fine motorboat. It is difficult to dock



because of the float out at the wing tip, but it is also easy to taxi ashore. Before my Turbo Renegade flying I had always taxied up a boat ramp; in the Turbo Renegade we went easily ashore on a sandy beach. It takes a lot of power to do this, and the overhead-mounted throttle is different enough to make you think about what you are doing. The other consideration is the landing gear—up to land on water, down to land on land, down to taxi ashore but, please, up before you start a water takeoff run.

The Renegade operates without a lot of handicaps induced by the fact that it is an airplane and a boat. There's no nosewheel steering because having a connection between the pedals and the nosewheel would mean holes in the hull. The airplane does fly with some excess engine cooling drag, which you can almost feel when flying, so the cruise speed is substantially lower than in a 270-hp landplane. But then in a 270-hp landplane you are allowed but one water touchdown where the Lake offers unlimited waterworks. The flying



qualities of the Lake are quite good with but one thing to note as different. Because the engine is mounted high on a pylon, a sudden increase in power can cause the nose to pitch down. This has been criticized by some, but it shouldn't be. As pilots, we have controls to use in taking care of the attitude of the airplane. It doesn't take great effort to keep the pitch attitude where you want it

when the power is increased abruptly, and anyone having real trouble with this is more a passenger than a pilot.

Why a turbocharger on a seaplane? There are lakes in the world that are at elevations above sea level, and on hot days even a sea-level lake has a density altitude above sea level. The Renegade is billed as a six-place airplane, though the useful load and balance restricts this





somewhat. Still, it is a 3,140-pound boat, and as much power as can be mustered is appreciated. So the turbocharger makes sense for a pilot who wants everything on his flying boat optimized. The airplane is also available without a turbocharger.

In flying the Turbo Renegade, I came away with a feeling that this is almost as good as it can get. If you started from scratch today and threw tens of millions of dollars at a new flying boat design, it would be difficult to make measurable improvements or to come away with a lot more utility. And this airplane is based on an old design. It originally took form at Grumman, to enter the immediate post-World War II market. That company had other light airplane designs as well (after their success with cats in World War II, some wags said their general aviation airplanes would be the Alleycat and the Pussycat), but the corporate decision was to opt out of the market. The little amphib eventually became the Colonial Skimmer, built by former Grumman employees. That evolved into Lake Aircraft Corporation, where the airplane was tweaked into its present form, and it remains a viable product more than 40 years after the start, just like the Beech Bonanza.

The evolution to the Renegade, with a three-foot stretch in the fuselage and a new shape for the hull, was a major step for relatively small Lake Aircraft, which currently builds four airplanes a month. It was a whole new Part 23 certification under the watchful eye of a Federal Aviation Administration that has no experience in certifying flying boats. The pages in the rule book on boats were apparently written with knowledge only of theory, and in the certification process there were long periods of inactivity because nobody in the FAA knew what to do next. The result was that it took three years to certify an airplane that, structurally, reflected the experience gained building 1,200 airplanes that are flying world-wide.

Insurance is a big question on seaplanes, because it is a double risk, a combination of a boat and an airplane. Lake addresses this with a training and an insurance program. The training is thorough, takes a week, and graduates a pilot with 25 hours in the airplane and a day in the classroom. The hull insurance rate is then 3.5 to four percent of the value until the pilot has 1,000 hours total and 200 in a Lake, at which time the rate drops to about two percent.





Product liability, the big bugaboo question, has not been a problem for this company. According to Lake president Armand E. Rivard, the company has never lost a product liability suit and has never settled out of court.

Another big seaplane question relates to where you can fly. Having been embroiled with the U.S. Army Corps of Engineers in a dispute over landing in "their" water, I have personal knowledge of how unreasonable bureaucrats can be about seaplanes. That battle was won, and in most cases if you see a motorboat in the water you can operate your seaplane there. The key is always the word "prohibit." If it is published that seaplanes are prohibited, don't splash down. For example, in New Jersey seaplanes are specifically prohibited except on four or five pieces of water.

Who buys amphibians? They can't really tie that down. Rivard says that people who like fine machinery and who like to fly are the customers. The overseas business is good, and Lake offers a mean-machine military version called the Seawolf that is quite successful. It has hard points and radar and can drop survival stuff to unfortunate folks in the water. The Seawolf is not a certified airplane and flies at a gross weight

400 pounds higher than the Renegade.

As you might expect, the \$243,300 base price of the Turbo Renegade puts it in the class of a big boy's toy. And the way they are equipped shows that the buyers aren't out to buy the world's least expensive seaplane. A full Bendix/King flight control system is approved in the airplane, and the most elaborate to date

had this along with a Bendix/King RDS 82 radar, Stormscope, dual horizontal situation indicators, and dual altimeters. Nothing that's this much fun is inexpensive, and it only takes one day of flying and floating to convince you that a Renegade goes right up at the top of a list of things that make you work ever harder to afford. □

#### Lake Turbo Renegade

Base price: \$243,300

#### Specifications

Powerplant	Lycoming TIO-540-AA1AD, 270 hp
Recommended TBO	1,800 hr
Propeller	Hartzell, 76 in dia, Q-tip, constant speed
Length	28.2 ft
Height	10 ft
Wingspan	38 ft
Wing area	170 sq ft
Wing loading	18.6 lb/sq ft
Power loading	12.2 lb/hp
Seats	4-6
Cabin length	10.3 ft
Cabin width	41 in
Cabin height	39 in
Empty weight, as tested	2,165.9 lb
Gross weight	3,140 lb
Useful load, as tested	974.1 lb
Fuel capacity, std	76 gal (456 lb)
Fuel capacity, w/opt tanks	90 gal (540 lb)
Baggage capacity	200 lb

#### Performance

Takeoff distance, ground roll	880 ft
Takeoff distance, water run	1,250 ft
Rate of climb, sea level	900 fpm
Max level speed	155 kt
Cruise speed/Range w/45-min rsv, std fuel (fuel consumption, ea engine)	
@ 78% power, best economy	145 kt/588 nm (94.8 pph/15.8 gph)
12,000 ft	
Max operating altitude	20,000 ft
Service ceiling	23,800 ft

#### Limiting and Recommended Airspeeds

Vx (best angle of climb)	65 KIAS
Vy (best rate of climb)	80 KIAS
Va (design maneuvering)	121 KIAS
Vfe (max flap extended)	125 KIAS
Vle (max gear extended)	125 KIAS
Vno (max structural cruising)	125 KIAS
Vne (never exceed)	147 KIAS
Vr (rotation)	57 KIAS
Vso (stall, in landing configuration)	49 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted. □